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TITLE : SOLDER

ABSTRACT : PROBLEM TO BE SOLVED: To provide tin-silver Sn-Ag series solder having excellent strength, furthermore thermally stable and moreover good in joinability by improving a tin-silver Sn-Ag alloy.

SOLUTION: This alloy has a compsn. essentially consisting of tin and contg., by weight, 1.0 to 4.0% silver, $\leq 2.0\%$ copper, $\leq 1.0\%$ nickel and $\leq 1.0\%$ phosphorus. Or, it may have a compsn. essentially consisting of tin and contg. 1.0 to 4.0% silver, $\leq 2.0\%$ copper, $\leq 1.0\%$ nickel and $\leq 0.1\%$ germanium. When Cu is added, Cu enters into a solid solution in Sn to improve the strength and heat resistance of the alloy without deteriorating its wettability. When Ni is added, the thermal stability of the alloy increases since the melting temp. of Ni is high. Moreover, when Ni is added, its crystal structure is refined, or Ni-Sn compds. are formed to improve its strength and thermal fatigue characteristics. When P and Ge are added, thin oxidized coating is formed at the time of melting the solder to suppress the oxidation of solder components such as Sn.

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